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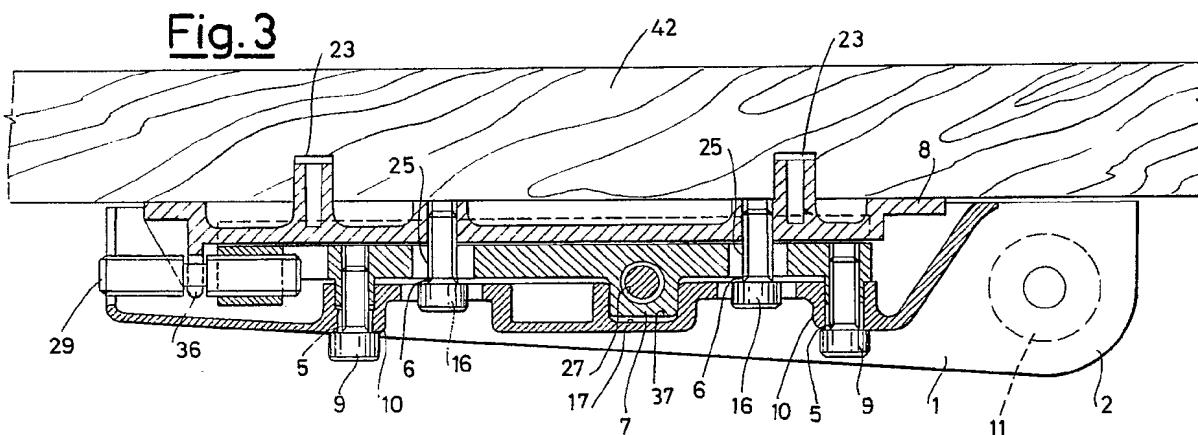
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(54) Means for the adjustable attachment of a wardrobe to a supporting arm.

(57) Means for the adjustable attachment of a wardrobe door to a supporting arm, it comprises a first part (1) designed for attachment to the supporting arm, a second part (7) and a third part (8) designed to be attached to the door (42). There are further provided first means (27) to adjust the position of the

said first part (1) with respect to the second part (7) in a first direction and second means (29) to adjust the position of the said second part (7) with respect to the third part (8) in a second direction perpendicular to the first.



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This invention relates to means for the adjustable attachment of a wardrobe to a supporting arm.

In wardrobes with a movable door there is the problem of accurately adjusting the position of the movable door with respect to the fixed body. When the connection between the door and the body is provided by means of conventional hinges the latter have for a long time been provided with suitable means of adjustment whereby the position of the door can be adjusted in both the horizontal and vertical position.

There are however wardrobes in which the door is attached to the fixed body by means of supporting arms. An example of such wardrobes is described and illustrated in patent application no. 20012 A/88 of the 29.3.88.

In this type of wardrobe the problem of adjusting the position of the door arises in a different way and cannot be solved in similar manner.

The object of this invention is to provide means whereby the door can be attached to the supporting arm in a manner which is adjustable in a vertical and horizontal direction.

Another object is to provide means of this type which are of particularly simple construction.

In accordance with the invention this object is accomplished by means for the adjustable attachment of a wardrobe door to a supporting arm characterised in that it comprises a first part designed for attachment to the supporting arm, a second part and a third part designed to be fixed to the door, first means to adjust the position of the said first part with respect to the second part in a first direction and second means to adjust the position of the said second part with respect to the third part in a second direction perpendicular to the first being provided.

The characteristics of this invention will be more clearly illustrated by the following detailed description of an embodiment which is illustrated by way of a non-restrictive example in the attached drawing, in which:

Figure 1 provides a frontal view of the means according to the invention,

Figure 2 provides a cross-sectional view of the means along the line II-II in Figure 1,

Figure 3 provides a view of the means in the longitudinal cross-section along the line III-III in Figure 1,

Figure 4 provides a rear view of the first part of the means in Figures 1 - 3,

Figure 5 provides a view of the first part in longitudinal cross-section along the line V-V in Figure 4,

Figure 6 provides a frontal view of the second part of the same means,

Figure 7 provides a view of the second part in longitudinal cross-section along the line VII-VII in

Figure 6,

Figure 8 provides a view of the second part in transverse cross-section along the line VIII-VIII in Figure 7,

Figure 9 provides a frontal view of the third part of the same means,

Figure 10 provides a view of the third part in longitudinal cross-section along the line X-X in Figure 9,

Figure 11 is a transverse cross-section through the third part along the line XI-XI in Figure 9,

Figure 12 provides a side view of the same part from the right hand side.

With reference to Figures 1, 2, 3, the means comprise a first part 1 constructed in the form of a receptacle to provide an inner housing space for a second part 7 and a third part 8.

As illustrated in detail in Figures 4 and 5, the first part 1 comprises a vertical wall 2 from which extend horizontal walls 3, 4, one of whose ends 11 is constructed in the form of a fork for the attachment of a connecting hinge, not illustrated, to the door supporting arm. A first pair of vertically elongated openings 5 for the passage of bolts 9 designed to secure first part 1 with respect to second part 7, and a second pair of openings 6, which are vertically elongated and of dimensions greater than those of the first pair of openings 5, designed for the free passage of bolts 16 for fixing second part 7 to third part 8, are provided in vertical wall 2.

The internal surface of vertical wall 2 bears some ribs which form a pair of guide grooves 10 having a V-shaped cross-section corresponding to openings 5 and a further groove 17 with a square cross-section in an intermediate position between openings 6. The abovementioned grooves 10 are designed to guide second part 7 with respect to first part 1. The two horizontal walls 3, 4 of first part 1 have corresponding openings 18, 20 designed for the passage of a tool for adjusting the vertical position of second part 7 as will be more particularly described below.

With reference to Figures 6, 7 and 8, second part 7 takes the form of a rectangular prism having a first vertical wall 12 and a second vertical wall 13. A pair of projections 14 of triangular cross-section interrupted at the centre by corresponding holes 15 project from vertical wall 13. When mounted the two pairs of projections are inserted into guide grooves 10 of first part 1 and holes 15 are aligned with vertically elongated openings 5 to receive securing bolts 9. A rib 37 of square cross-section which when mounted is inserted in square cross-section groove 17 projects from this wall. Rib 37 of square cross-section is engaged transversely to the longitudinal dimension of part 7 by means of a threaded tang 27 for adjustment of second part 7 with respect to first part 1. Adjustment is provided

by acting on threaded tang 27 by means of a suitable tool (for example a hexagonal nut spanner) by passing it through hole 18 or 20 (depending on the selected orientation of tang 27) and engaging one end of threaded tang 27, through the reaction of the other end of this tang against the adjacent wall 3 or 4 of the first part (Figure 2).

At one end of second part 7 there is provided a central projection 41 which is engaged by a further threaded tang 29 which has the function of ensuring adjustment of the horizontal position of second part 7 with respect to third part 8, as more particularly described above. This threaded tang 29 has a non-threaded central portion 36 of reduced diameter whose objects will be described below. In the space between projections 14 of triangular cross-section and rib 17 of square cross-section there is a pair of horizontally elongated openings 40 positioned to correspond with openings 6 in vertical wall 2 of first part 1.

The second vertical wall 12 of second part 7 has a pair of lateral grooves 38 of V-shaped cross-section which extend the entire length of second part 7 and a central groove 39 of square cross-section between the two, parallel thereto and of similar length.

With reference to Figures 9-12 third part 8 is constructed in the form of a rectangular plate of which one side 29 is designed to fit against vertical wall 12 of second part 7 and for this purpose is provided with a pair of longitudinal ribs 31 of triangular cross-section which engage longitudinal grooves 38 of second part 7 (Figure 8) and a central rib 32 of square cross-section which can be housed in corresponding central groove 39 of the second part. Longitudinal ribs 31 of triangular cross-section are interrupted by through holes 22 which together with similar terminal holes 23 allow third part 8 to be fixed to a wardrobe door 42 by means of second side 34 which is provided with centering tangs 23. Central rib 32 in turn has a pair of holes 25 which can be engaged by bolts 16 for securing third part 8 to second part 7. At one end of central rib 32 there is fork 35 which rises from face 21 and straddles threaded tang 29 at the location of its non-threaded portion 36 (Figure 3).

The procedure for adjusting the position of the door fixed to third part 8 with respect to the supporting arm to which first part 1 is attached is as follows.

First of all bolts 9 and/or 16 are slackened off to provide a certain amount of play between parts 1, 7, 8. Adjustment is then effected in one of the two directions, for example in the vertical direction. For this purpose tang 27 is caused to rotate by means of a suitable tool so that projections 14 and 37 of second part 7 slide in grooves 10 and 17 of first part 1.

Horizontal adjustment is then effected when the vertical adjustment has been made.

For this purpose tang 29 is caused to rotate by means of a suitable tool so that longitudinal ribs 31 of third part 8 slide in lateral grooves 38 of triangular cross-section in second part 7. At the same time the lateral walls of central rib 32 of square cross-section of third part 8 contact the corresponding lateral walls of central groove 39 of second part 7, thus providing support for the third part and therefore door 42.

Bolts 9, 16 which were slackened off in order to make the adjustment are then tightened up.

It should be noted that the use of projections of triangular cross-section 38, 31 and 14, 10 provides perfect attachment between the parts after adjustment has been made, eliminating any play, while the engagement between square cross-section rib and groove 39, 32 offers a secure support for horizontal slip while adjustment is being made and the similar engagement 37, 17 provides correct guidance for vertical sliding.

## Claims

1. Means for the adjustable attachment of a wardrobe door to a supporting arm, characterised in that it comprises a first part (1) designed for attachment to the supporting arm, a second part (7) and a third part (8) designed to be attached to the door (42), first means (27) to adjust the position of the said first part (1) with respect to the second part (7) in a first direction and second means (29) to adjust the position of the said second part (7) with respect to the third part (8) in a second direction perpendicular to the first being provided.

2. Means according to claim 1, characterised in that the said first part (1) provides an internal space for housing the said second (7) and third (8) parts.

3. Means according to claim 2, characterised in that the said first part (1) has a vertical wall (2) in which is made a first pair of openings (5) and a second pair of openings (6), the said openings (5, 6) being designed for the passage of bolts (9, 16) securing the said parts (1, 2, 3).

4. Means according to claim 3, characterised in that an inner side of the said vertical wall (2) has a pair of guide grooves (10) with a V-shaped cross-section and a further guide groove (11) of square cross-section.

5. Means according to claim 4, characterised in that the said second part (7) has a first vertical wall (13) from which arise a pair of projections (14) of triangular cross-section and a rib (37) of square cross-section which respectively engage the said V-shaped guide grooves (10) and the said further groove (17) of square cross-section.

6. Means according to claim 5, characterised in that the first means (27) are represented by the threaded tang (21) which engages within the said rib (37) of square cross-section and reacts against a horizontal wall (3, 4) of the said first part (1).

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7. Means according to claim 1, characterised in that the said second part (7) has a second vertical wall (12) in which is provided a pair of longitudinal grooves (38) of V-shaped cross-section with a intermediate central groove (39) of square cross-section.

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8. Means according to claim 7, characterised in that the said third part (8) consists of a rectangular plate which on one face (21) bears a pair of longitudinal ribs (31) of triangular cross-section and a central rib (32) of square cross-section, which engage respectively the said longitudinal grooves (38) and the said central groove (39) of the second part (7).

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9. Means according to claim 1, characterised in that the second means (29) are represented by a threaded tang (29) inserted within a central projection (41) at one end of the second part (7), the said threaded tang (29) having a central non-threaded portion (36), on which is inserted a fork (35) located at one end of the third part (8).

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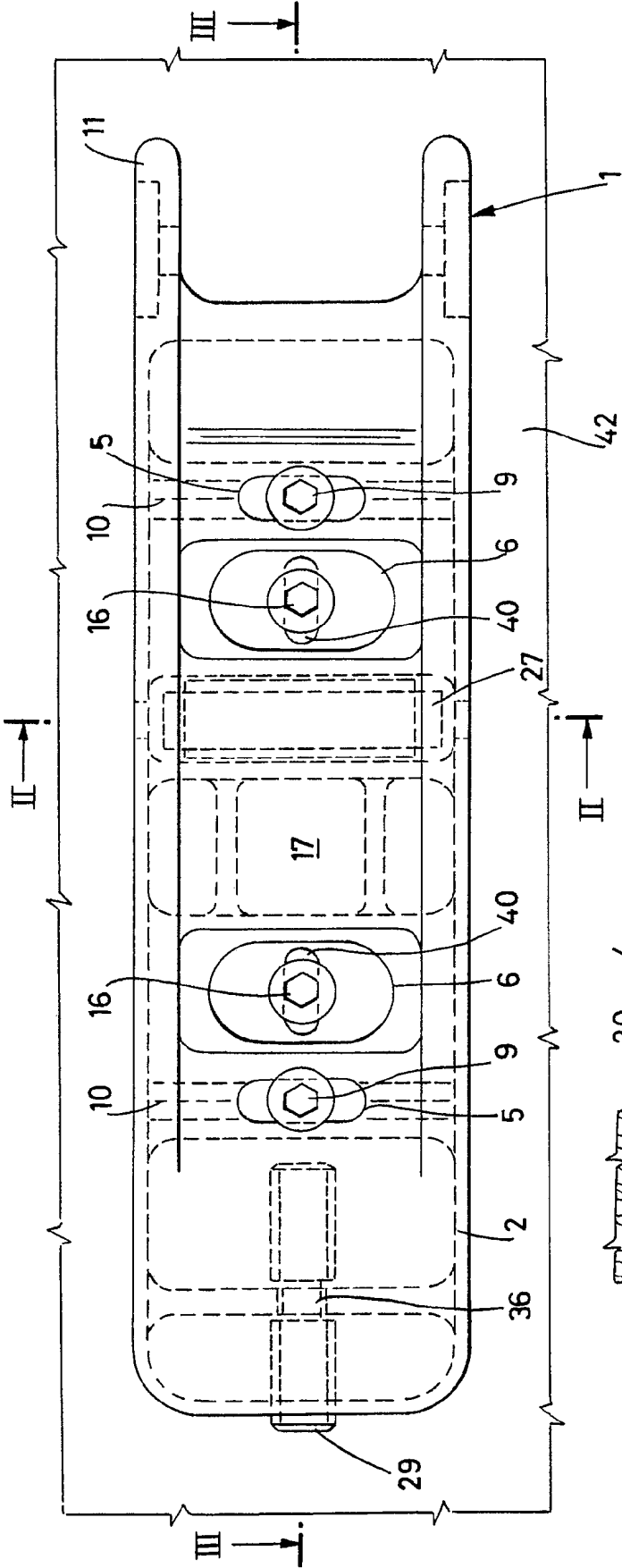


Fig. 1

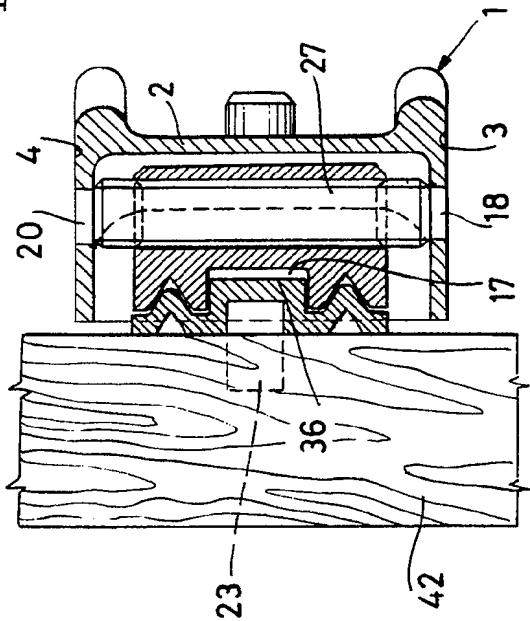
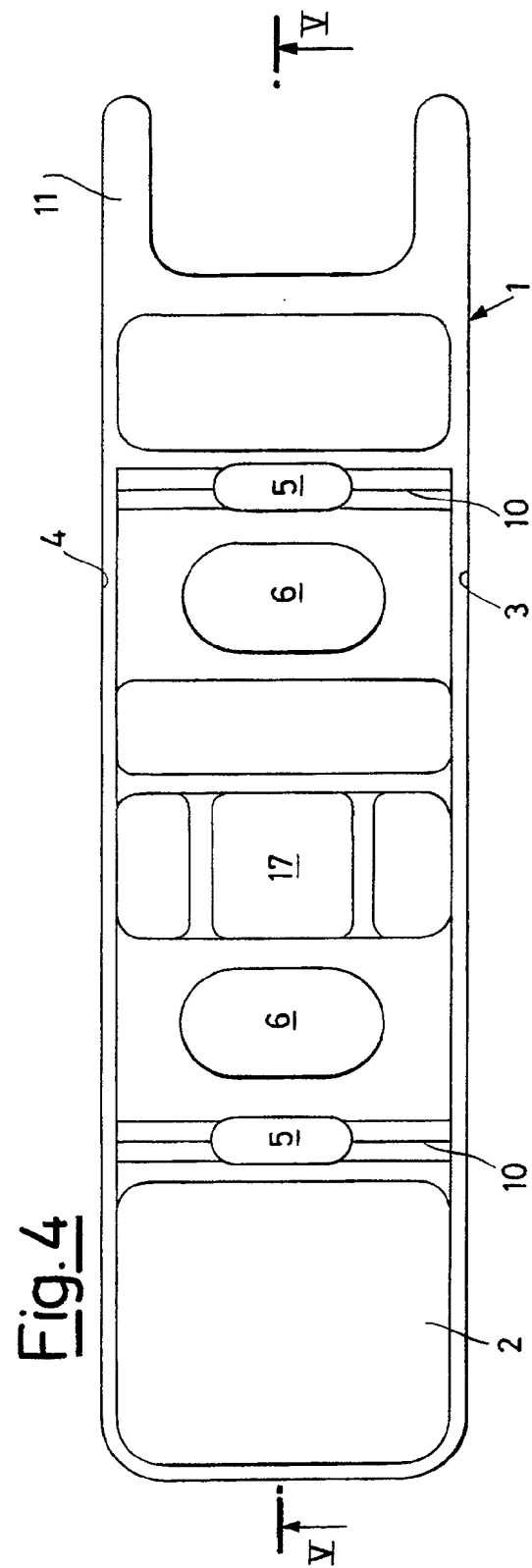
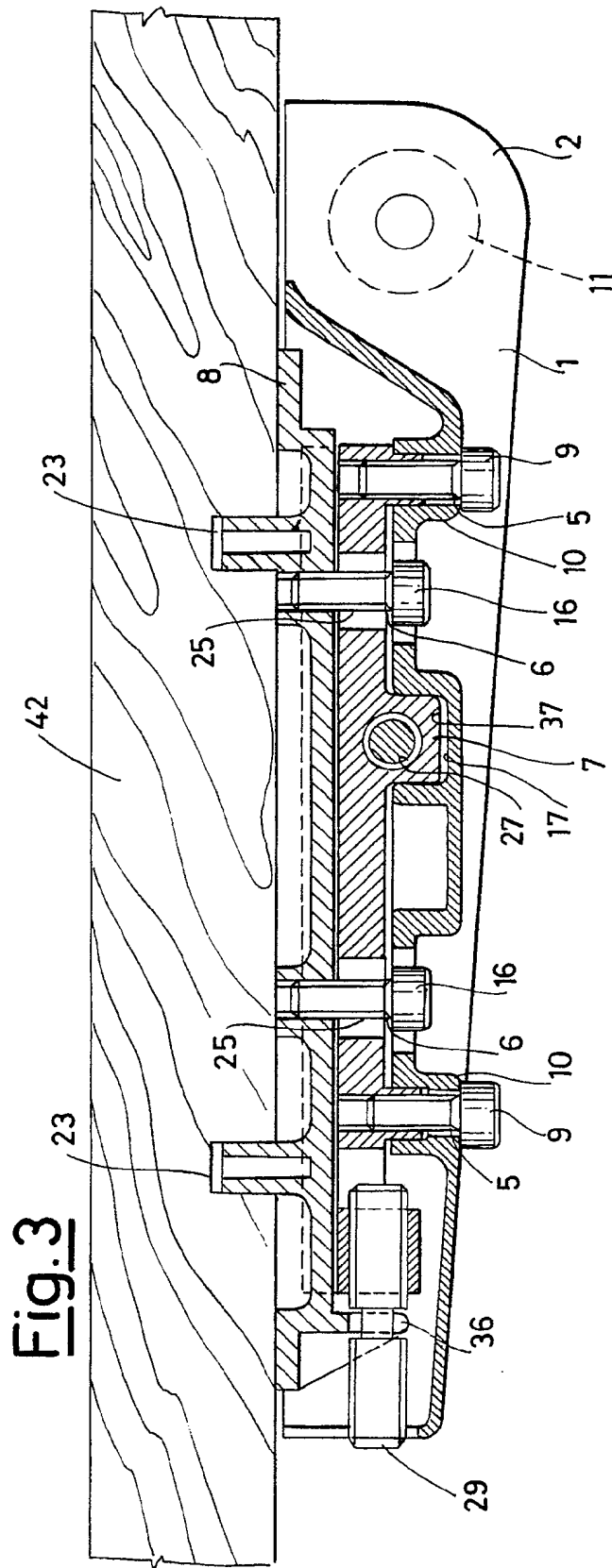
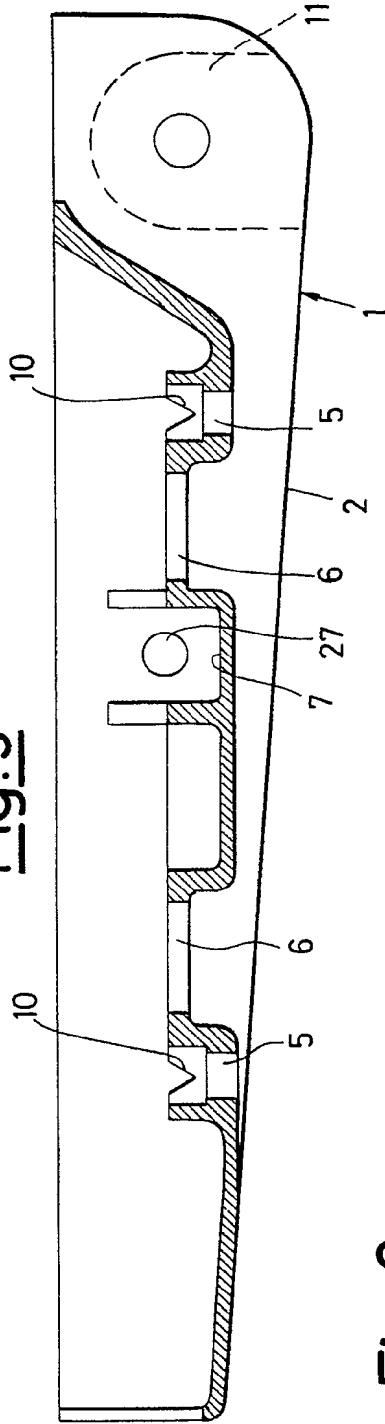


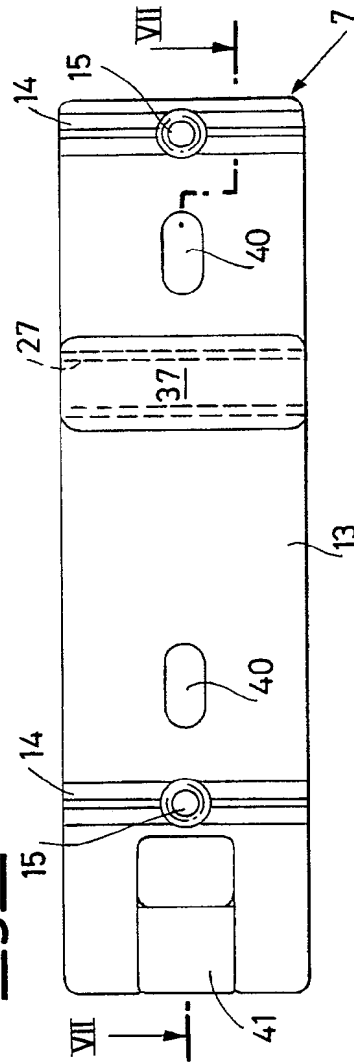
Fig. 2



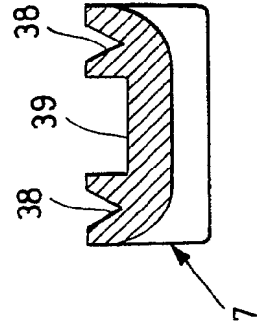
**Fig.5**



**Fig.6**



**Fig.8**



**Fig.7**

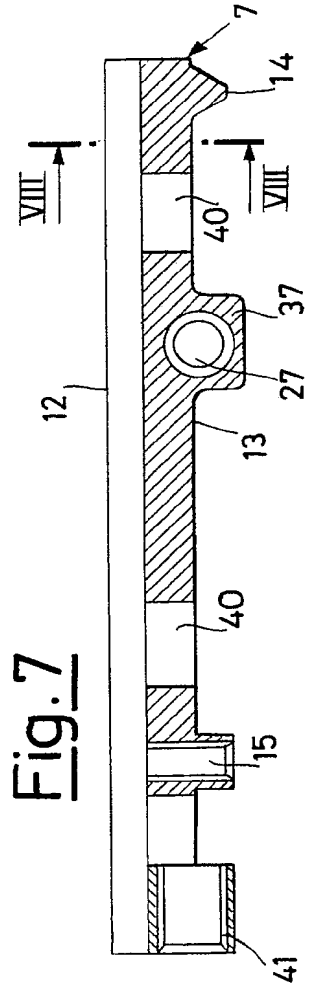


Fig. 9

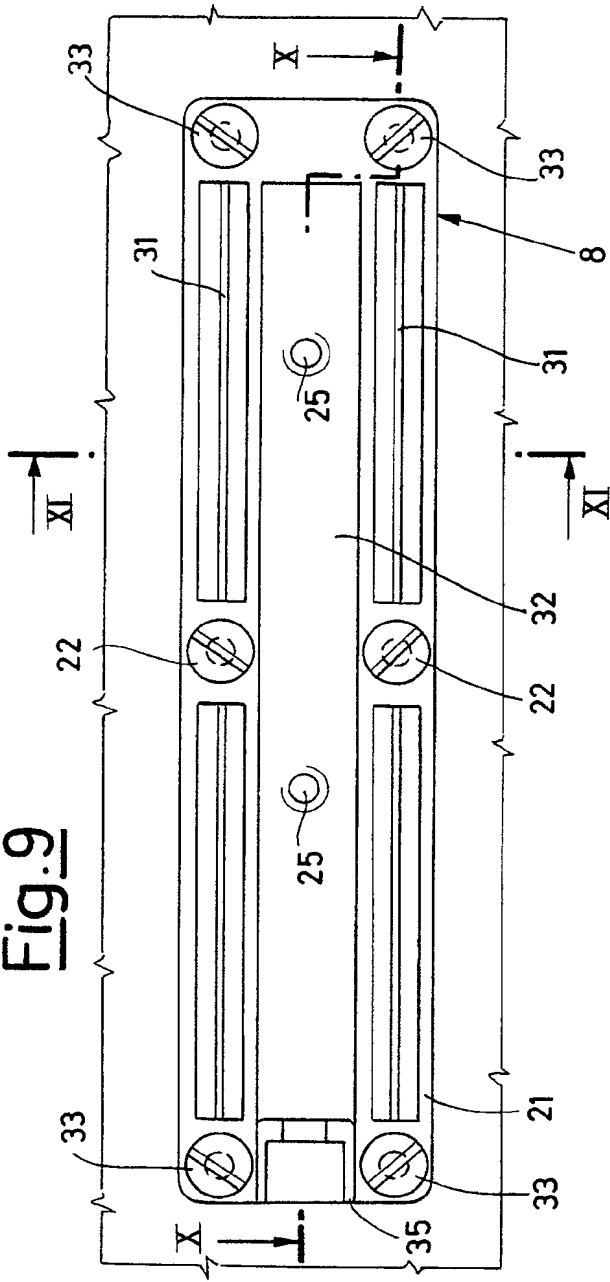


Fig. 11

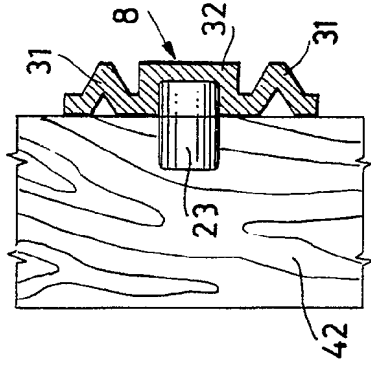


Fig. 10

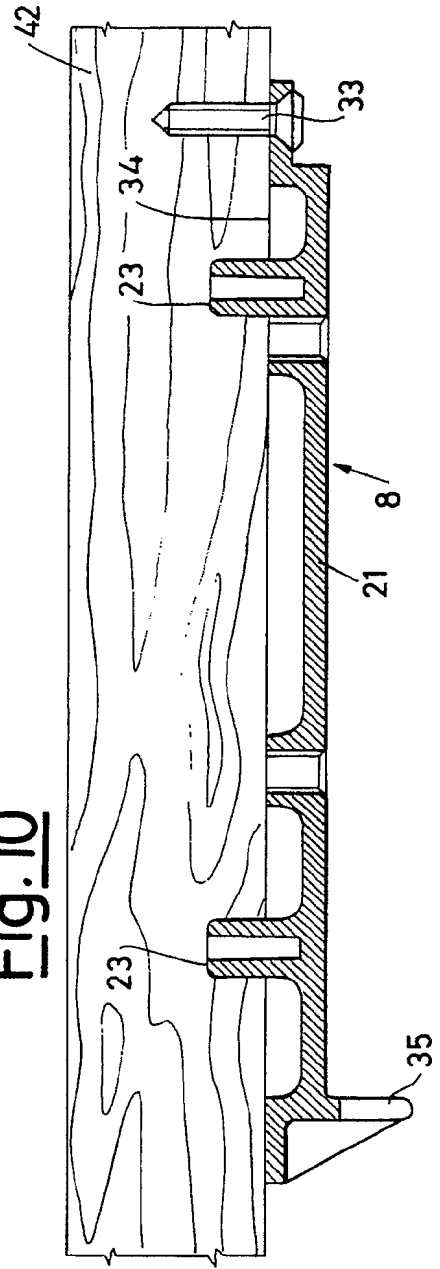
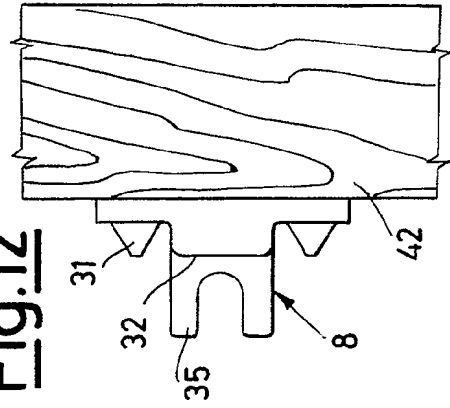


Fig. 12







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## EUROPEAN SEARCH REPORT

Application Number

EP 90 20 3033

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X,Y,A	FR-A-2 241 680 (HETTICH) * page 2, line 34 - page 3, line 40 ** page 4, lines 11 - 25; figures 1-9 * -- --	1,2,3,7,8, 9,4,5,6	E 05 D 7/04
Y,A	CH-A-4 725 65 (BLUM) * column 2, lines 27 - 39; figure 3 * -- --	7,8,4,5,6	
Y	FR-A-2 399 523 (YOSHIDA KOGYO) * page 4, lines 6 - 28 ** page 6, lines 2 - 8 ** page 6, lines 17 - 19; figures 3, 8 * -- --	9	
A	FR-A-2 088 762 (BOTTAZZO) * page 3, line 16 - page 4, line 11; figures 1-8 * -- --	1,9	
A	US-A-2 839 778 (HUTCHINSON) * column 1, lines 23 - 33 ** column 2, lines 5 - 29 @ column 2, lines 47 - 72 @ column 3, lines 1 - 36; figures 1-8 * -- --	1,3,6,9	
A	FR-A-2 348 347 (BLUM) * page 2, lines 1 - 36 ** page 2, line 40 - page 3, line 4 ** page 3, lines 9 - 12; figures 1-3 * -- --	1,3	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)  E 05 D
Place of search  The Hague		Date of completion of search  25 February 91	Examiner  GUILLAUME G.E.P.
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